STATUS

LAND SOFTWARE TRANSFER & INTEGRATION GROUP (STIG)

Jim Firestone/STIG Lead

MODIS SDST

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Presentation Overview

- Purpose of Science Software Integration
- Code Delivery Status
- Current Schedules
- Recent SCF Queries
- New Datasets and Utilities
- Standards and Guidelines
- MODIS API
- What We Need from You

Purpose of Science S/W Integration

- Integrate L2 and L3 software processes supplied by the STMs into processing threads running at the DAACs.
- Support the STMs in integrating the necessary interface tools (SDP toolkits, HDF, gridding, etc.) into their software.
- Translate an understanding of algorithm and product requirements into a robust, efficient, and maintainable SDPS producing all required MODIS output products.
- Develop a SDPS which is flexible enough to accommodate evolving science code.

Recent Land SCF queries

- M-API: support for unsigned integers, tables, and metadata
- Tools for bit manipulations
- Tools for converting geolocation to tile
- HDF file formats for L1A, L1B, Sim. L1B
- Datasets: Sim. L1B, cloud mask, land/water mask

New Datasets and Utilities Available Via FTP

- Cloud mask for sim. L1B - full res. and subsampled versions.
- Sim. L1B data - 3 orbits/36 bands in HDF; both subsampled and full res. versions; update with separated geolocation due by 7/31.
- Global ocean cloud mask - Wisconsin/SSEC GAC and LAC versions.
- Land-water mask - 1 km. version from EDC.
- HDF file format descriptions - for L1A, L1B (post-MODLAND), geolocation.
- MODIS API - Ver. 1.1 available, 1.1p1 by 8/4.
- L2G/L3 utilities (Robert Wolfe).

MODIS Anonymous FTP (ltpftp.gsfc.nasa.gov)

- /pub/projects/modis/CloudMask - GAC/LAC masks
- /pub/projects/modis/Land-SeaMask - EDC 1km.
- /pub/projects/modis/SDPTK.templates - C/FORTRAN templates for mandatory SDP tools
- /pub/projects/modis/Sim_MODIS_Data - sim. L1B and corresponding cloud mask
- /pub/projects/modis/hdf - HDF product descriptions
- /pub/project/modis/icd - Interface Control Docs.
- /pub/projects/modis/modis_api - M-API lib. and docs.

Highlights - MODIS Extensions to ECS Standards

- Prologs
- Liberal use of comments
- Compile with ANSI checking on
- < > and “” for C header includes
- No GOTO statements
- Code fits within 80 columns
- Initialize all variables, including pointers and arrays

MODIS API Overview

- Library of C and FORTRAN routines to simplify access to product HDF files
- Designed to support arrays, tables and metadata on all SCF platforms
- Designed to be compatible with EOS-HDF structures (e.g. swath and grid)
- First version of User's Guide released 4/3/95
- Released in 2 versions to date, 3 more planned
- Developed by SDST (1 designer, 7 part-time programmers) using SAIC/GSC software process

Why MODIS API and not native HDF?

- Uniformity of science code in terms of HDF version used
- Bundles multiple HDF routines together where convenient
- Performs extensive error checking not handled by native HDF
- Will handle EOS and MODIS-specific metadata
- Guaranteed compatibility with EOS-HDF swath and grid structures as they evolve
- Standardized interface to HDF in science code eases maintainability
- Provides a single point of contact (SDST) for communications with NCSA regarding HDF problems
- Centralization of array names and constants in a single header file available globally in applications code (mapi.h)
- Similar concept has been employed successfully in other projects, e.g. SeaWiFS

Why MODIS API and not native HDF (cont.)

Current or Planned MODIS API Usage

- Level 1A software (C)
- Geolocation software (C)
- Level 1B simulation software (C)
- Level 1B software (P)
- Level 2 and 3 software (all code not using native HDF) (P)

(C = Current Usage, P = Planned Usage)

MODIS API Functionality Summary

- M-API Version 1.1 - released 5/25/95 (C); 6/16/95 (C+FORTRAN)
  - Basic HDF file access (open/close).
  - Basic Array Object access.
  - Operation on SGI only.

- M-API Version 1.1p1 - scheduled release 8/4/95 (C+FORTRAN)
  - Unsigned integer support.
  - Operation on SGI only.

MODIS API Functionality Summary (cont.)

- M-API Version 1.2 - scheduled release 10/12/95
  - Port to Sun, IBM, Alpha, HP.
  - Global (file-level) and array (SDS-level) metadata I/O.
  - Table Object (Vdata) access (C only).

- M-API Version 2.0 - scheduled release 1/31/95
  - Data Group Vgroup facility.
  - Table Object (Vdata) access (FORTRAN).
  - Data object names available in mapi.h header.
  - SDP toolkit integration.
    - Messages handled by SMF.
  - Standard file metadata implementation (e.g. ECS core set).

What STIG Needs from the ST

- An estimated delivery date for your ß3 code
- A complete code delivery on the above date
- Maintenance of a single version of the code (SDP TK, HDF, M-API installed at your SCF)
- A decision of who will perform the integration of SDP tools & M-API
- Assistance testing port of M-API to non-SGI platforms
- Frequent and regular communications with STIG
- Help getting required ancillary data at simulated data times
- Tests performed in preparing the ß3 code
- Completed comment forms with any suggestions

Handouts and Reference Material

- MODIS Standards & Guidelines - Draft Update
- New Web URLs
- MODIS API User's Guide - Ver. 1.1
- Code delivery procedures
- Code turnaround process
- At-launch and Beta bubble diagrams
- HDF array metadata description from NCSA
- Email summarizing simulated L1B data and cloud mask
- HDF-EOS docs: Primer, Browse, Swath, Libraries, Schedules
- Comment Forms

Pertinent Web URLs

- Cloud mask - Wisconsin/SSEC - http://cloud.ssec.wisc.edu/modis/cldmskcldmask.html
- EDC datasets home page - http://sun1.cr.usgs.gov/doc/edchome/datasets/edcdata.html
- ECS information for instrument teams - http://ecsinfo.hitc.com/iteams/iteams.html
- MODIS home page - http://ltpwww.gsfc.nasa.gov/MODIS/MODIS.html
- MODLAND home page - http://modarch.gsfc.nasa.gov/MODIS/modland.html
- EOSDIS home page - http://spso.gsfc.nasa.gov/eos_homepage/servers/eosdis.html
- NCSA HDF ftp server - http://ftp.ncsa.uiuc.edu/HDF